



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region 1  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

**MAY 28 2014**

Mr. David M. Daniels  
President  
Richardson's Farms, Inc.  
156 South Main Street  
Middleton, MA 01949

**Re: Notice of Potential Violations and Administrative Order Pursuant to Clean Air Act**

Dear Mr. Daniels:

On May 6, 2014, representatives of the United States Environmental Protection Agency Region 1 (EPA) conducted an Emergency Planning and Community Right-To-Know Act (EPCRA) and Clean Air Act Section 112(r) inspection at Richardson's Farms, Inc. (dba Richardson's Ice Cream, hereinafter referred to as "the Facility" or "Richardson's"). The Facility is located at 156 South Main Street in Middleton, Massachusetts.

The primary purpose of the Clean Air Act inspection was to determine the Facility's compliance with the Act's "General Duty Clause" due to the presence of an anhydrous ammonia refrigeration system (System) at the Facility. Pursuant to the General Duty Clause, found at Section 112(r)(1) of the Act, 42 U.S.C. § 7412(r)(1), owners and operators of stationary sources producing, processing, handling, or storing substances listed pursuant to Section 112(r)(3) of the Clean Air Act, 42 U.S.C. § 7412(r)(3),<sup>1</sup> or any other extremely hazardous substance, have a general duty to:

- (1) identify hazards which may result from accidental releases of such substances, using appropriate hazard assessment techniques;
- (2) design and maintain a safe facility taking such steps as are necessary to prevent releases; and
- (3) minimize the consequences of accidental releases which do occur.

The General Duty Clause applies regardless of the amount of chemical stored. A guidance document that further explains the General Duty Clause may be found at [www.epa.gov/emergencies/docs/chem/gdcregionalguidance.pdf](http://www.epa.gov/emergencies/docs/chem/gdcregionalguidance.pdf).

<sup>1</sup> Anhydrous ammonia is one such listed substance.

## Notice of Potential Violations

EPA inspectors found several dangerous conditions at the Facility, listed in the table below, that likely give rise to violations of the General Duty Clause. This list is not yet complete. Many of these conditions indicate that the Facility is not following industry standards of care that are common in the ammonia refrigeration industry.

Dangerous Condition	Potential GDC Violation	Examples of Industry Standard of Care
Lack of a hazard analysis that identifies hazards posed by the System	Failure to identify hazards which may result from accidental releases of extremely hazardous substances, using appropriate hazard assessment techniques	The recommended industry practice and standard of care for ammonia refrigeration systems of this size would be to identify hazards using industry checklists, a What-if analysis, or a Hazard and Operability study. See e.g., the International Institute of Ammonia Refrigeration's ("IIAR's") <i>Ammonia Refrigeration Management Program</i> , Section 10; EPA's <i>Guidance for Implementation of the General Duty Clause Clean Air Act Section 112(r)(1)</i> , available at <a href="http://www.epa.gov/oem/docs/chem/gdcregionalguidance.pdf">http://www.epa.gov/oem/docs/chem/gdcregionalguidance.pdf</a> ; IIAR's <i>Process Safety Management Guidelines for Ammonia Refrigeration</i> ; IIAR Bulletin 110, <i>Start-up, Inspection and Maintenance of Ammonia Mechanical Refrigeration Systems</i> , Section 5.2.1 [The owner shall confirm that a Process Hazard Analysis has been completed and that recommendations have been resolved or implemented.]
Inadequate documentation available about the technology and equipment in the process.  For example, the failure to have an accurate Piping and Instrumentation Diagram or a basic floor plan makes it very difficult to understand this complicated system.	Failure to identify hazards which may result from accidental releases, using appropriate hazard assessment techniques.  Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.	ANSI/IIAR's <i>Ammonia Refrigeration Management Program</i> , Section 3; IIAR Bulletin No. 109, <i>Minimum Safety Criteria for a Safe Ammonia Refrigeration System</i> , Section 4; IIAR Bulletin 110, <i>Start-up, Inspection and Maintenance of Ammonia Mechanical Refrigeration Systems</i> , Section 4.
There is no trained and qualified operator on site to operate the system.	Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.	IIAR Bulletin No. 109, <i>Minimum Safety Criteria for a Safe Ammonia Refrigeration System</i> , Section 5.1 [Each plant should have an owner's appointed representative responsible for compliance with all refrigeration safety requirements.]; IIAR's <i>Ammonia Refrigeration Manual</i> , Section 2 [Management System], Section 9 [Training Program]; ANSI/IIAR Bulletin 110, Section 5.2.3



Dangerous Condition	Potential GDC Violation	Examples of Industry Standard of Care
<p>Corroding piping and valves</p> <p>Also, the vapor barrier is breached on multiple process pipes, which further creates a risk of corrosion.</p>	<p>Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.</p>	<p>The industry standard of care calls for a <i>preventative</i> maintenance program. See e.g., IIAR's <i>Ammonia Refrigeration Manual</i>, Section 5 and Appendix 5.1; IIAR Bulletin 110, <i>Startup, Inspection and Maintenance of Ammonia Mechanical Refrigerating Systems</i>, Section 6 (e.g., 6.6 and 7.7); IIAR Bulletin No. 109, <i>IIAR Minimum Safety Criteria for a Safe Ammonia Refrigeration System</i>, Sections 4.7.4 and 4.7.5 [4.7.4 --Uninsulated refrigerant piping should be examined for signs of corrosion. If corrosion exists, the pipe should be cleaned down to bare metal and painted with a rust prevention paint. Badly corroded pipe should be replaced. 4.7.5 --Insulated piping showing signs of vapor barrier failure should have the insulation removed and the pipe inspected....]</p>
<p>The piping and valves are not labeled to indicate contents, direction of flow, physical state (i.e., liquid or vapor), pressure level (i.e., high or low), and there are no component markers for other system equipment (e.g., receivers, accumulator, etc.).</p>	<p>Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.</p> <p>Failure to minimize the consequences of releases which do occur.</p>	<p>IIAR's <i>Ammonia Refrigeration Manual</i>, Section 4.2; IIAR Bulletin No. 109 Section 4.7.6 [All ammonia piping should have appropriate pipe markers attached to indicate the use of the pipe and arrows to indicate the direction of flow, such as in IIAR Bulletin 114, "Guidelines for: Identification of Ammonia Refrigeration Piping and System Components"]; IIAR Bulletin No. 114, <i>Identification of Ammonia Refrigeration Piping and System Components</i>; ANSI/IIAR 2-2008 (2012 ed.) Section 10.6 [All piping mains, headers and branches shall be identified as to the physical state of the refrigerant (that is, vapor, liquid, etc.), the relative pressure level of the refrigerant, and the direction of flow. The identification system used shall either be one established as a standard by a recognized code or standards body or one described and documented by the facility owner.].</p>
<p>Main shut-off valves (King Valves) for receivers are not identified with a prominent sign nor easily accessible.</p>	<p>Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.</p> <p>Failure to minimize the consequences of releases which do occur.</p>	<p>IIAR Bulletin No. 109, <i>IIAR Minimum Safety Criteria for a Safe Ammonia Refrigeration System</i>, Section 4.10.3 [The main shut-off valve(s) (king valve(s)); hot gas defrost line main shut-off valve; and NH3 pump liquid main shut-off valve(s) and/or disconnects; of the ammonia system should be readily accessible and identified with a prominent sign having letters sufficiently large to be easily read.]; ANSI/ASHRAE 15-2010, <i>Safety Standard for Refrigeration Systems</i>, Section 11.2.2 [signage requirements for valves]</p>
<p>The machinery room doors were not adequately labeled to warn of the hazards of entering a room with ammonia-containing machinery, nor to provide exit signs.</p>	<p>Failure to minimize the consequences of releases which do occur.</p>	<p>ANSI/IIAR 2-2008 (2012 ed.) Section 13.1.10: In section entitled, "Entrances and Exits" is a requirement that refrigerating systems shall be provided with approved informative signs, emergency signs, charts and labels in accordance with NFPA 704. Hazard signs shall be in accordance with International Mechanical Code. Also see Section 13.1.2.4 (signs restricting entry to authorized personnel), 13.2.4.1 (signs with meaning of alarms):</p>



Dangerous Condition	Potential GDC Violation	Examples of Industry Standard of Care
		ANSI/IIAR 2-2008 (2012 ed.) Appendix L (examples of recommended machinery room door signage); ASHRAE 15-2010, §§ 8.11.2.1 (signs with meaning of alarms), 8.11.8 (signs restricting entry to authorized personnel), 11.2.4 (same), 11.7 (posted emergency shutdown procedures).
<p>Some manual system control overrides in the emergency shutdown control box are not operational because keys are missing.</p> <p>Also, it was not clear from the labels which equipment the emergency shutdown controls could activate.</p>	<p>Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.</p> <p>Failure to minimize the consequences of releases which do occur.</p>	<p>ANSI/ASHRAE 15-2010 Section 8.12.i [Remote control of the mechanical equipment in the refrigerating machinery room shall be provided immediately outside the machinery room door solely for the purpose of shutting down the equipment in an emergency. Ventilation fans shall be on a separate electrical circuit and have a control switch located immediately outside the machinery room door.];</p> <p>ANSI/IIAR 2-2008 (2012 ed.) Section 13.1.13.2 [A remote emergency shutdown control for refrigerant compressors, refrigerant pumps, and normally closed automatic refrigerant valves within the machinery room, shall be provided immediately outside the designated principle exterior machinery room door...]</p> <p>[ANSI/IIAR 2-2008 (2012 ed.) Section 13.3.1 [....The mechanical ventilation systems shall be powered independently of the machine room machinery and shall not be subject to emergency shutdown controls.]]</p>
<p>There is no fresh air intake to the machinery room that would allow an adequate sweep of the room volume for ventilation, and there is an inadequate emergency exhaust system for the machinery room.</p>	<p>Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.</p> <p>Failure to minimize the consequences of releases which do occur.</p>	<p>ANSI/ASHRAE 15-2010 Section 8.11.4 [Provision shall be made for inlet air to replace that being exhausted. Openings for inlet air shall be positioned to avoid recirculation...] ANSI/IIAR 2-2008 (2012 ed.) Section 13.3.9.1 [Emergency mechanical ventilation systems shall be capable of providing at least one air change every two minutes, which is 30 air changes per hour (30 ACH) based on the gross machinery room volume.] ANSI/IIAR 2-2008 (2012 ed.) Section 13.3.9.2 [Emergency mechanical ventilation shall be actuated by (a) A refrigerant detector at a level not exceeding 1,000 ppm; (b) Manual controls.]</p>
<p>The ammonia detector in the machinery room does not activate visual and audible alarms inside or outside the machinery room. Nor does the detector activate the ventilation system.</p> <p>Also, there is only a single ammonia detector located in the multi-chamber machinery room.</p>	<p>Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.</p> <p>Failure to minimize the consequences of releases which do occur.</p>	<p>ANSI/IIAR 2-2008 (2012 ed.), Section 13.2 [Each refrigerating machinery room shall contain at least two refrigerant detectors that actuate an alarm and mechanical ventilation.] Section 13.2.1.2 [The detectors shall activate visual and audible alarms inside the refrigerating machinery room and outside each entrance to the refrigerating machinery room] Section 13.3.1 [Each refrigerating machinery room shall be vented to the outdoors by means of mechanical ventilation systems actuated automatically by refrigerant detectors...] Section 13.2.3 [requirements to have detectors activate alarms and emergency mechanical ventilation systems]; Section 13.3.9.2 [Emergency mechanical ventilation shall be actuated by (a) A refrigerant detector at a level not exceeding 1,000 ppm; (b) Manual controls.];</p> <p>ANSI/ASHRAE 15-2010 Section 8.11.2.1 [Each refrigerating machinery room shall contain a detector</p>



Dangerous Condition	Potential GDC Violation	Examples of Industry Standard of Care
		located in an area where refrigerant from a leak will concentrate that activates an alarm and mechanical ventilation. The alarm shall annunciate visual and audible alarms inside the refrigerating machinery room and outside each entrance to the refrigerating machinery room.]
No standard operating procedures (including maintenance procedures) available.	Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.	IIAR's <i>Ammonia Refrigeration Management Program</i> , Section 4 [describes purpose of standard operating procedures as providing concise and realistic descriptions of the procedures needed to operate equipment, and manage normal and abnormal situations]; and IIAR Bulletin No. 110 <i>Guidelines for: Startup, Inspection and Maintenance of Ammonia Mechanical Refrigerating Systems</i> , Section 5.2.2 [Confirm that the operating procedures are complete and address steps for each operating phase. Ensure that the operating procedures include operating limits, safety and health considerations, and safety systems and their functions....].
Presence of many combustible materials in machinery room  The machinery room had boxes, clothing, much waste oil, and, in some areas, a wooden ceiling. The room had no fire suppression system and several ignition sources.	Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.  Failure to minimize the consequences of releases which do occur.	ANSI/IIAR 2-2008 (2012 ed.), § 13.1.3.1 [Flammable and combustible materials shall not be stored in machinery rooms.]; Section 13.1.1.3 [Walls, floors, and ceilings shall be of non-combustible construction. Walls, floors, and ceilings separating the machinery room from other occupied spaces shall be of at least one-hour fire resistive construction unless the building is equipped with an automatic fire sprinkler system.];
Birds nesting in holes in outside machinery room walls	Failure to design and maintain a safe facility taking such steps as are necessary to prevent releases.	ANSI/IIAR 2-2008 (2012 ed.), § 13.1.1 [Requirements for machinery room structural integrity]
No emergency eyewash and shower stations	Failure to minimize the consequences of releases which do occur.	ANSI/IIAR 2-2008 (2012 ed.), § 13.1.6 [An eyewash and body shower unit shall be located external to the machinery room and readily accessible via an exit.]
Ammonia pressure relief headers exhaust too close to roof surface, which presents a danger for anyone standing nearby.	Failure to minimize the consequences of releases which do occur.	ANSI/IIAR 2-2008 (2012 ed.) Section 11.3.6.4 [The discharge from pressure relief devices to the atmosphere shall be not less than 15 feet [4.8 m] above the adjacent grade or roof level or as specified by the jurisdictional authority and shall be arranged to avoid spraying of refrigerant on persons in the vicinity].
No emergency response plan	Failure to minimize the consequences of	IIAR's <i>Ammonia Refrigeration Management Program</i> § 7 (2005): Refrigeration facilities should develop an



Dangerous Condition	Potential GDC Violation	Examples of Industry Standard of Care
	releases which do occur.	up-to-date, facility-specific emergency action plan that accurately describes the facility and the potentially affected population. Such a plan should include, among other items: types of evacuation, evacuation procedures and routes, procedures for employees who remain to maintain critical operations, procedures for accounting for evacuated employees, any employee rescue and medical duties, and means for reporting emergencies. An adequate emergency response program should also identify procedures for responding to an ammonia release, including shutting the system down, starting emergency ventilation, and coordinating with all relevant off-site emergency responders.

In addition to the above list, the EPA inspectors observed extensive floor staining and liquid residue draining from the reciprocating compressors to the floor drains in the machinery room, suggesting that liquids other than wastewater (such as oil) have been entering the drains. To evaluate whether these discharges could pollute groundwater or surface water, EPA must know where those floor drains lead.

This letter is EPA's initial response to deficiencies observed during EPA's inspection. Additional concerns may be uncovered as EPA continues to review the Facility's compliance records. Also, this letter does not limit or otherwise preclude EPA from taking civil or criminal enforcement action pursuant to CAA Section 113, 42 U.S.C. § 7413, with regard to these or other potential violations.

To improve the safety of your operations, staff, and neighbors, and to make headway towards compliance, EPA urges you to take immediate positive steps to remedy the above-cited deficiencies throughout the Facility. The hazards analysis ordered by the enclosed Administrative Order (discussed below) should help you prioritize the order in which you perform work to make the System safer. Should you decide, after conducting the hazard analysis, that it makes more sense to build a new ammonia refrigeration system and machinery room rather than fix all the problems with the existing System, EPA is open to having a discussion about how to safely operate the existing System while a new machinery room and system are being built. However, there are certain safety steps you must take within 45 days regardless of whether you decide to build a new system or machinery room. As required in the enclosed Administrative Order, these steps include conducting a hazard analysis, informing emergency planning and response agencies about your ammonia inventory, developing an emergency response plan, installing adequate ammonia detectors and alarm systems, and adding machinery room door signage.

### **Administrative Order**

As described above, EPA is prioritizing a few items you must fix immediately. Accordingly, as explained in the enclosed Notice of Violation and Administrative Order,

**EPA finds that Richardson's has violated the General Duty Clause, 42 U.S.C. § 7412(r)(1), by failing to:**

- (1) identify hazards which may result from accidental releases of such substances, using appropriate hazard assessment techniques (by not having a process hazard analysis/review); and
- (2) minimize the consequences of releases (by not providing information to emergency responders about Richardson's ammonia inventory, not having an emergency plan, not having adequate detector and alarm systems, and not having proper emergency response signage in and around the machinery room).

The Administrative Order requires Richardson's to correct these violations within 45 days, with the help of an ammonia refrigeration expert. It is likely that EPA will take steps to address the other dangerous conditions once you have submitted your hazard analysis.

Should EPA's order conflict with any work that the Town of Middleton may require regarding the refrigeration system, please let EPA know so that all the parties can plan and prioritize accordingly. Also, please ensure that any work Richardson's or its contractors conduct on the refrigeration system complies with codes, standards, and guidelines recognized as generally accepted good engineering practices so that such work does not inadvertently create more hazards. If you have any questions regarding this letter, please contact Len Wallace or Catherine Smith, Esq. of my staff, respectively, at (617) 918-1835 or (617) 918-1777.

Sincerely,



Susan Studlien  
Director, Office of Environmental  
Stewardship

cc: Ned Bolth, Richardson's Farms, Inc.  
Catherine Smith, EPA  
Leonard Wallace, EPA  
Laura Berry, EPA  
Frank W. Twiss, Chief, Town of Middleton Fire Department  
Fred Mallaby, OSHA  
Ed Pawlowski, MA-DEP  
Kurt N. Schwartz, SERC



**Enclosures:**

- (1) Notice of Violation and Administrative Order**
- (2) Small Business Resources sheet**
- (3) Inspection report with photographs and photo log**